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THE FILAMENTOUS MYXOPHYCEAE OF JAMAICA

BY

FRANCIS DROUET

CURATOR OF CRYPTOGAMIC BOTANY

BOTANICAL SERIES

FIELD MUSEUM OF NATURAL HISTORY

VOLUME 20, NUMBER 5

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THE FILAMENTOUS MYXOPHYCEAE OF JAMAICA

FRANCIS DROUET

F. S. Collins in Proc. Amer. Acad. 37: 231–270 (1901) reviewed the earlier literature on the algae of Jamaica and interpreted the specimens known to him at that time. The myxophyceae included in his list were principally those collected by J. E. Humphrey and by C. E. Pease and E. Butler during the period 1891–1901.

Since that time many specimens by various collectors have accumulated in herbaria. The largest collection is that made by C. R. Orcutt during 1927–29, mostly of species inhabiting soil and rocks from many parts of the island. Some of Orcutt's specimens were sent to the British Museum (Natural History); most went to the United States National Museum and were distributed to various people and institutions through my personal herbarium and that of Professor Wm. Randolph Taylor during and prior to 1938. The late M. A. Howe visited Jamaica in 1906–07 and secured numerous marine specimens, especially from the north coast and from the vicinity of Kingston. I. F. Lewis collected in the eastern part of the island during trips in 1906 and 1908; many of his specimens were issued with published records by Collins, Holden & Setchell in *Phycotheca Boreali-americana*. Other botanical collectors, including F. S. Earle in 1902, L. M. Underwood in 1903, A. E. Wight in 1905–06, S. Maxwell in 1909, W. Harris in 1914, W. R. Maxon and E. P. Killip in 1920, and B. M. Davis in 1926, picked up specimens here and there.

Our knowledge of the inland aquatic algae of Jamaica has advanced little since 1901, as indicated by the absence of specimens of Anabaena in herbaria and by the paucity of species of Nostoc, Phormidium, Oscillatoria, and Spirulina listed here. Likewise many species of the soil and of brackish and salt water abundantly represented in herbaria from neighboring islands are conspicuously absent in Jamaican collections. On the other hand the collectors of the flora have claimed no more than secondary interest in the myxophyceae; they have picked up only random specimens during brief periods of work chiefly in the eastern quarter of the island. It may be surprising, therefore, that so large a number of species has been found in the material thus far accumulated. Speculation upon the relationship of the blue-green algal flora of Jamaica with that of other West Indian islands and of tropical America in general

may well be reserved until much more collecting has been done in the region.

Specimens cited below are to be found in the herbaria indicated by abbreviations as follows: BM, British Museum (Natural History); C, Herbarium of the University of California; D, Herbarium of Francis Drouet; F, Farlow Herbarium of Harvard University; FM, Cryptogamic Herbarium, Field Museum of Natural History; G, Herbarium of Goucher College, Baltimore; Mo, Herbarium of the Missouri Botanical Garden; N, Herbarium of the New York Botanical Garden; P, Herbarium of the University of Pennsylvania; S, Naturhistoriska Riksmuseet, Stockholm; T, Herbarium of Wm. Randolph Taylor; U, United States National Museum.

Stigonemataceae

FISCHERELLA AMBIGUA (Born. & Flah.) Gom. Journ. de Bot. 9: 52 (1895). *Scytonema ambiguum* Kütz. ex Born. & Flah. Ann. Sci. Nat. VII Bot. 5: 100 (1887). *S. badium* Wolle ex Born. & Flah. (as sp. inquir.) ibid. 5: 111 (1887). *Phormidium interruptum* var. *rigidum* Gardn. Mem. N. Y. Bot. Gard. 7: 44 (1927). *Plectonema flexuosum* Gardn.[1] ibid. 7: 47 (1927).—On soil. One specimen, JAMAICA: *Lewis*, 1908 (C).

HAPALOSIPHON PUMILUS (Kütz.) Kirchn. ex Born. & Flah. ibid. 5: 61 (1887). *H. fontinalis* (Ag.) Born. Bull. Soc. Bot. France 36: 156 (1889). *H. brasiliensis* Borge Ark. f. Bot. 15 (13): 94 (1919).—The one collection, from fresh water, is that listed by Collins (see the first paragraph of this paper) as *H. fontinalis*. ST. MARY: on rocks in Wag Water river, Castleton, *Humphrey 397a*, Apr. 1893 (G, N).

MASTIGOCOLEUS TESTARUM Lagerh. ex Born. & Flah. ibid. 5: 54 (1887). *Scytonema conchophilum* Humphr. apud Coll. Proc. Amer. Acad. 37: 241 (1901).—Marine. The type (and only) collection of *S. conchophilum* contains old masses of *Mastigocoleus testarum* in which the numerous hormogonia have begun to grow and have burst out of the old and brown sheaths in many places, with the resulting appearance of scytonematoid branching. In some of the shells of the one collection *M. testarum* (as reported in Collins' list) is preserved in excellent condition. KINGSTON: in shells and bones, Navy Yard, *Humphrey*, Aug. 1997 (TYPE of *Scytonema conchophilum*, G; Phyc. Bor.-amer. LII, FM, T).

[1] The TYPE of *P. flexuosum* in the New York Botanical Garden (PUERTO RICO: on soil in the woods, Coamo Springs, *N. Wille 272b*, Jan. 1915) is an undeveloped mass of *Fischerella ambigua*.

Nostocaceae

NOSTOC COMMUNE Vauch. ex Born. & Flah. Ann. Sci. Nat. VII Bot. 7: 203 (1888).—On wet soil and rocks. The Humphrey specimens cited are those referred to in Collins' list. PORTLAND: on damp earth, Port Antonio, *Humphrey*, July 1897 (FM, N). ST. THOMAS: Arntully, *Orcutt 5601* (BM, D, F, N, S, U); Farm Hill, *Orcutt 5463*, 1928 (BM); Moy Hall, *Orcutt 6828*, Nov. 1928 (D, F, N, U). ST. ANDREW: on sandy soil, Constant Spring, *Humphrey 365*, Apr. 1893 (G, N). WESTMORELAND: Darliston, *Orcutt 6227*, *6228*, *6231*, *6235*, Aug. 1928 (BM, D, F, N, S, U). JAMAICA: on earth, Green Castle, *Orcutt 4555*, Jan. 1928 (D, F, N, U).

NOSTOC VERRUCOSUM (L.) Vauch. ex Born. & Flah. ibid. 7: 216 (1888).—In freshwater streams. Included here is the material reported by Collins. PORTLAND: Stone Valley river, *Orcutt 5844*, 1928 (BM, D, F, N, S, U). ST. MARY: on rocks in Wag Water river, Castleton, *Humphrey*, Apr. 1893 (G).

NOSTOC PARMELIOIDES Kütz. ex Born. & Flah. ibid. 7: 219 (1888). —In freshwater streams. The one collection is the *N. microscopicum* of Collins' report. ST. ANDREW: on sides of and steps into the reservoir, Constant Spring, *Humphrey 361*, Apr. 1893 (G, N).

HORMOTHAMNION ENTEROMORPHOIDES Grun. in Born. & Flah. ibid. 7: 260 (1888).—In quiet marine waters. The specimens reported by Collins are included here. KINGSTON: on coral reef, Navy island, Kingston harbor, *Humphrey*, June 1897 (N). ST. ANN: in shallow water, St. Anns Bay, *Humphrey*, Mar. 1893 (Phyc. Bor.-amer. 56, D, FM, N, T). ST. JAMES: Montego Bay, *Davis*, 1926 (T). JAMAICA: *Humphrey* (Coll. N. Amer. Alg. 23, D, FM, N).

CYLINDROSPERMUM MUSCICOLA Kütz. ex Born. & Flah. ibid. 7: 254 (1888). *C. caeruleum* Dick. ex Born. & Flah. (as sp. inquir.) ibid. 7: 255 (1888).—On wet soil and in shallow fresh water. Specimens reported by Collins are here cited. ST. THOMAS: Moy Hall, *Orcutt 7048*, Nov. 1928 (D, F, N, U). ST. MARY: Castleton, *Humphrey 364* (N); on sides of reservoir, Botanical Garden, Castleton, *Humphrey 407*, Apr. 1893 (N).

Rivulariaceae

CALOTHRIX JULIANA (Menegh.) Born. & Flah. Ann. Sci. Nat. VII Bot. 3: 348 (1886). *Homoeothrix juliana* (Born. & Flah.) Kirchn. apud Geitl. Rabenh. Kryptogamenfl. 14: 575 (1932).—On rocks in freshwater streams. The one collection is reported by Collins. ST. ANN: Roaring river, *Humphrey 324*, Mar. 1893 (G, N).

CALOTHRIX AERUGINEA Thur. ex Born. & Flah. ibid. 3: 357 (1886).—On plants and other objects in marine and brackish water. The one collection is recorded as *C. confervicola* by Collins. PORTLAND: on several algae, Navy island, Port Antonio, *Humphrey 236*, Mar. 1893 (C, G, N).

CALOTHRIX CONTARENII (Zanard.) Born. & Flah. ibid. 3: 355 (1886).—On wood and rocks in intertidal zones and slightly above. The one collection reported by Collins, ST. MARY: on wreck on beach, Port Maria, *Humphrey*, Mar. 1893 (G).

CALOTHRIX CRUSTACEA Thur. ex Born. & Flah. ibid. 3: 359 (1886).—On rocks and other objects between tides and in the spray-zone above. KINGSTON: on wall of a littoral cavern, rocks below Fort Clarence, *Howe 4654*, *4655*, Dec. 1906 (D).

CALOTHRIX PILOSA Harv. ex Born. & Flah. iibid. 3: 363 (1886). *Tildenia pilosa* Polj. Bull. Jard. Bot. Princip. URSS 27: 327 (1928). *T. dura* Polj. ibid. 27: 329 (1928).—Chiefly on rocks and sand between tide marks. PORTLAND: on *Bostrychia tenella*, Port Antonio, *Pease & Butler* (D, N). HANOVER: on rocks near Sandy bay, *Howe 4394*, Jan. 1907 (N). WESTMORELAND: on rocks, Robins bay, *Orcutt 4682*, Jan. 1928 (BM, D, F, N, S, U).

DICHOTHRIX BORNETIANA Howe Bull. Torr. Club 51: 357 (1924). —On rocks and shores between tide marks. HANOVER: on stones near Sandy bay, *Howe 4940*, Jan. 1907 (N).

DICHOTHRIX FUCICOLA (Kütz.) Born. & Flah. ibid. 3: 379 (1886). —Epiphytic on larger marine algae. One specimen cited here is in part the basis for Collins' record of *D. penicillata*. KINGSTON: on seawall, Gun Cay, *Howe 4611*, Dec. 1906 (D,N). JAMAICA: on *Dictyota dichotoma*, *Pease & Butler*, 1900 (N).

DICHOTHRIX PENICILLATA Zanard. ex Born. & Flah. loc. cit. (1886).—Epiphytic on larger marine algae. One collection here was listed by Collins. ST. MARY: on *Cymopolia barbata*, Port Maria, *Humphrey*, Mar. 1893 (Phyc. Bor.-amer. 62, FM, G, N). KINGSTON: Gun Cay, *Howe 4612*, Dec. 1906 (N). ST. JAMES: on Digenia on a littoral reef, Montego Bay, *Howe 4772*, Jan. 1907 (D, N).

GLOEOTRICHIA NATANS (Hedw.) Rabenh. ex Born. & Flah. ibid. 4: 369 (1886). *Rivularia natans* (Hedw.) Welw. ex Born. & Flah. (pro synon.) loc. cit. (1886). *Calothrix scytonemicola* var. *brasiliensis* Borge Ark. f. Bot. 19 (17): 5 (1925). *Rivularia* (*Gloeotrichia*) *flagelliformis* Gardn. Mem. N. Y. Bot. Gard. 7: 71 (1927).—In quiet fresh water. The one collection is recorded in Collins' list. ST. MARY: on floating leaves, Botanic Garden, Castleton, *Humphrey 413*, Apr. 1893 (F, G, N).

Scytonemataceae

SCYTONEMA ALATUM (Berk.) Borzi ex Born. & Flah. Ann. Sci. Nat. VII Bot. 5: 110 (1887). *Petalonema alatum* Berk. ex Born. & Flah. (pro synon.) loc. cit. (1887).—On objects kept continuously wet with fresh water, particularly on cliffs. PORTLAND: Stone Valley river, *Orcutt 5853*, 1928 (D, F, N, U).

SCYTONEMA CRASSUM Näg. ex Born. & Flah. ibid. 5: 109 (1887). —On limestone and chalk wet during at least part of the year by seeping fresh water, less often on soil. PORTLAND: Chepstowe, *Orcutt 4516*, Jan. 1928 (D, U). ST. THOMAS: Arntully, *Orcutt 5096*, 1928 (BM, D, U); Farm Hill Works, *Orcutt 5597, 5598a*, May 1928 (BM, D, F, N, S, U).

SCYTONEMA VELUTINUM Rabenh. ex Born. & Flah. ibid. 5: 108 (1887).—On rocks and cliffs wet with fresh water at only certain seasons of the year. KINGSTON: on the Palisades, *Howe 4561*, Dec. 1906 (D, FM, N). ST. CATHERINE: on roadside bank, Bog Walk, *Howe*, Dec. 1906 (FM, N).

SCYTONEMA DENSUM (A. Br.) Born. ex Born. & Flah. ibid. 5: 109 (1887). *S. evanescens* Gardn. Mem. N. Y. Bot. Gard. 7: 71 (1927). *Petalonema densum* (Born. & Flah.) Mig. apud Geitl. Rabenh. Kryptogamenfl. 14: 793 (1932).—On soil and rocks continuously wet with fresh water. The one collection is recorded by Collins. PORTLAND: in turf, moist places, Port Antonio, *Humphrey 421*, Apr. 1893 (FM, G, N).

SCYTONEMA MYOCHROUS (Dillw.) Ag. ex Born. & Flah. ibid. 5: 104 (1887).—On rocks and soil wet at intervals with fresh water. ST. THOMAS: Arntully, *Orcutt 2821*, Sept. 1927 (BM); Farm Hill, *Orcutt 5444a* (BM).

SCYTONEMA FIGURATUM Ag. ex Born. & Flah. ibid. 5: 101 (1887). *S. mirabile* (Ag.) Born. Bull. Soc. Bot. France 36: 155 (1889), not Wolle.—On rocks and soil wet at least intermittently with fresh water. ST. THOMAS: Moy Hall, *Orcutt 7050*, Nov. 1928 (D, N, U); Farm Hill Works, *Orcutt 5598*, May 1928 (BM).

SCYTONEMA OCELLATUM Lyngb. ex Born. & Flah. ibid. 5: 95 (1887).—On soil, rocks, and trunks of trees. One collection cited below was recorded and distributed by Lagerheim in Wittr. & Nordst. Alg. exs. 28: 1322b (1896). ST. THOMAS: Farm Hill Works, *Orcutt 5598b*, May 1928 (D, F, N, U); Arntully, *Orcutt 5618, 5794*, 1928 (BM, D, F, N, S, U). ST. MARY: near Castleton Botanical Garden, *Underwood 153a*, Jan. 1903 (FM, N). ST. ANDREW: on

overhanging cliffs, *Lewis*, July 1906 (N), idem, Morces Gap (N); in cortice arboris ad Constant Spring, *G. Lagerheim*, Dec. 1892 (Wittr. & Nordst. Alg. exs. 1322b, FM, N). KINGSTON: on roadside bank near Hope Gardens, *Howe*, Dec. 1906 (D, FM, N); Hope, *Earle 484*, 1902 (D, N). ST. CATHERINE: walls of limestone cave, Troja, *Wight*, May 1909 (N). JAMAICA: Fern Hill, *Orcutt 3427, 2537*, Oct. 1927 (D, F, N, U); Ferry river, *Orcutt 6276*, 1928 (BM, D, F, N, U); Weireka, *Orcutt 6267*, 1928 (D, N, U); Geddy Hall, *Maxwell*, 1909 (BM); on stone walls. Resource, *Lewis*, 1908 (N).

SCYTONEMA VARIUM Kütz. ex Born. & Flah. ibid. 5: 97 (1887).—Subaerial on rocks and other objects in fresh water. The specimen reported as *S. Archangelii* by Collins belongs here. ST. MARY: on moist rocks by spring, Castleton, *Humphrey*, Apr. 1893 (G). JAMAICA: *Eggers 3557* (FM).

SCYTONEMA HOFMANNII Ag. ex Born. & Flah. ibid. 5: 97 (1887). —Subaerial in fresh water, or aerial on rocks, soil, leaves, tree-trunks, etc. The specimens recorded as *S. javanicum* in Collins' list are placed here. PORTLAND: trail from Morces Gap to Vinegar Hill, *Maxon & Killip 1299*, Mar. 1920 (N, U); lower slopes of Blue Mountain peak, *Maxon & Killip 1169*, Mar. 1920 (N, U); road from Silver Hill Gap to Hardware Gap, *Maxon & Killip 1244*, Mar. 1920 (N, U). ST. THOMAS: on leaves of trees, Bath, *Humphrey* (Phyc. Bor.-amer. 1258, D, N, T). ST. MARY: on flower-pot in garden, Castleton, *Humphrey*, Apr. 1893 (G). ST. ANDREW: Morces Gap, *Lewis* (N); on rock near headwaters of Clyde river, *Lewis*, July 1906 (N). ST. CATHERINE: Troja, *Orcutt 4638*, Jan. 1928 (BM). JAMAICA: near Green river fording, *Harris 10051*, May 1914 (D, N).

SCYTONEMA JAVANICUM (Kütz.) Born. ex Born. & Flah. ibid. 5: 95 (1887). *S. hyalinum* Gardn. Univ. Calif. Publ. Bot. 14: 7 (1927). *S. guyanense* var. *epiphyllum* Gardn. N. Y. Acad. Sci. Sci. Surv. Porto Rico 8: 299 (1932).—On continuously wet leaves and trunks of trees. ST. MARY: Castleton, *Humphrey*, Apr. 1893 (G). JAMAICA: Glenburnie mountain, *Orcutt 7726*, Jan. 1929 (D, U).

SCYTONEMA GUYANENSE (Mont.) Born. & Flah. ibid. 5: 74 (1887). *S. mirabile* var. *majus* Gardn. Mem. N. Y. Bot. Gard. 7: 78 (1927). *S. guyanense* var. *minus* Gardn. ibid. 7: 79 (1927).—On rocks, soil, and other objects wet intermittently with fresh water. Here is placed the specimen termed *S. ocellatum* in Collins' list. PORTLAND: Spring Garden near Buff Bay, *Orcutt 4769*, Feb. 1928 (BM, D, F, N, S, U). ST. THOMAS: Moy Hall, *Orcutt 5843*, 1928 (D, U); Arntully, *Orcutt 5108*, Apr. 1928 (BM, D, F, N, S, U), idem on rocks, *Orcutt*

6907, Nov. 1928 (BM, D, N, S, U). ST. MARY: on bank, Stileman bay, *Orcutt 4589*, Jan. 1928 (D, U); on old palm stems, Castleton, *Humphrey*, Apr. 1893 (G). ST. ANDREW: Morces Gap, *Orcutt 5564*, 1928 (BM, D, F, N, U); near Constant Spring, *Orcutt 6307*, *6313* (BM). KINGSTON: Long mountain, *Orcutt 6267*, Aug. 1928 (BM). ST. CATHERINE: Great Salt pond, Cookson estate, *Orcutt 6465*, Sept. 1928 (D, N, U); Troja, *Orcutt 4638*, Jan. 1928 (D, N, U). WESTMORELAND: Darliston, *Orcutt 6217*, 1928 (BM, D, F, N, S, U). JAMAICA: Westphalia (Cedar Hurst), *Orcutt 3757*, Nov. 1927 (BM, D, U); Fern Hill, *Orcutt 3418*, *3547*, *3609*, Oct. 1927 (BM, D, F, N, S, U); *Lewis*, 1908 (C); on rock, *Orcutt 3563* (BM).

SCYTONEMA MILLEI Born. ex Born. & Flah. ibid. 5: 93 (1887).—On soil and rocks. ST. ANDREW: Mavis Bank road, *Lewis*, June 1906 (Phyc. Bor.-amer. 1405, D, FM, N, T). JAMAICA: *Lewis*, Jan. 1908 (C; Phyc. Bor.-amer. 1557b, FM, N, T).

SCYTONEMA STUPOSUM Born. ex Born. & Flah. ibid. 5: 92 (1887). *S. caldarium* Setch. Erythea 7: 48 (1899). *S. azureum* Tild. Amer. Alg. 7: 630 (1909).—Subaerial on rocks and other objects in fresh water. Here are placed two collections reported in the Collins list as *S. crispum*. The material distributed by Collins, Holden & Setchell as *S. crispum* in Phyc. Bor.-amer. No. 60 is heterogeneous; in some sets only *S. cincinnatum* is to be found, in at least one other only *S. stuposum*. ST. MARY: in reservoir, Botanical Garden, Castleton, *Humphrey*, Apr. 1893 (Phyc. Bor.-amer. 60, T). ST. ANDREW: sides of trough, Constant Spring, *Humphrey*, Apr. 1893 (G); on mosses and rocks, *Lewis*, July 1906 (N). JAMAICA: in herb. F. Wolle (P).

SCYTONEMA CINCINNATUM (Kütz.) Thur. ex Born. & Flab. ibid. 5: 89 (1887). *S. crispum* (Ag.) Born. Bull. Soc. Bot. France 36: 157 (1889).—Floating in quiet fresh water. Part of the material reported by Collins as *S. crispum* is placed here. See the remarks under *S. stuposum* above. ST. MARY: in reservoir, Botanical Garden, Castleton, *Humphrey*, Apr. 1893 (Phyc. Bor.-amer. 60, FM, G). KINGSTON: in basin, *Humphrey*, Apr. 1893 (G).

HASSALLIA BYSSOIDEA (Berk.) Hass. ex Born. & Flah. ibid. 5: 116 (1887). *Scytonema* (*Petalonema*) *junipericola* Farl. in Coll. Hold. & Setch. Phyc. Bor.-amer. 16: 756 (1900). *Anabaena cupressaphila* Wolle ex Forti Syll. Myxophyc. 456 (1907). *Tolypothrix byssoidea* (Born. & Flah.) Kirchn. apud Forti ibid. 561 (1907).—On rocks, soil, and trunks of trees wet intermittently with rainwater. Here are placed the specimens distributed by Collins, Holden &

Setchell as *S. ocellatum* in Phyc. Bor.-amer. 1559a, b, and as *S. Millei* in 1557a. PORTLAND: on steps of courthouse, Port Antonio, *Humphrey 422*, Apr. 1893 (N), *Humphrey 419* (N). ST. THOMAS: on concrete foundation, Arntully, *Orcutt 5108a, 6912*, Apr. and Nov. 1928 (BM, D, N, U). ST. MARY: Grays inn, *Orcutt 4088a*, Dec. 1927 (D, U), idem *4115a, 4152* (BM); near Castleton Botanic Garden, *Underwood 153*, Jan. 1903 (N). ST. ANDREW: on trees (Phyc. Bor.-amer. 1559a, FM, N, T), on earth, Cinchona, *Lewis*, Jan. 1908 (Phyc. Bor.-amer. 1559b, FM, N, T); Mavis Bank road, *Lewis 16*, June 1906 (N); on rocks in cañon of the Cane river pear Kingston, *Howe*, Dec. 1906 (FM, N). ST. CATHERINE: Troja, *Orcutt 4666, 4667*, Jan. 1928 (BM). ST. JAMES: on bark of tree root, Montego Bay, *Howe*, Jan. 1907 (N). JAMAICA: *Lewis*, Jan. 1908 (C, Phyc. Bor.-amer. 1557a, FM, N, T); *Humphrey 405* (N).

Oscillatoriaceae

PORPHYROSIPHON NOTARISII (Menegh.) Kütz. ex Gon. Ann. Sci. Nat. VII Bot. 15: 331 (1892).—On soil, rocks, and other objects intermittently wet with fresh water. See Drouet in Amer. Journ. Bot. 24: 601 (1937) and Field Mus. Bot. Ser. 20: 39 (1939) for synonymy of this species. PORTLAND: Port Antonio, *Wight*, 1909 (D, T); in the mountains along headwaters of Buff river, Pleasant Hill to Buff Bay, *Orcutt 3793*, Nov. 1927 (BM, D, F, N, S, U). ST. THOMAS: Arntully, *Orcutt 2708*, Aug. 1927 (D, F, N, U), *7021*, Nov. 1928 (BM, D, F, N, S, U). ST. ANDREW: on rock, trail to Cinchona, *Orcutt 5501*, 1928 (BM, D, F, N, U). KINGSTON: roadside bank near Hope Gardens, *Howe*, Dec. 1906 (D, N). ST. MARY: with *Scytonema Hofmannii* on flowerpot in garden, Castleton, *Humphrey*, Apr. 1893 (G). TRELAWNEY: Rose Hill, *Earle*, 1902 (D, N). JAMAICA: *Lewis* (C; Phyc. Bor.-amer. 1555, FM, T).

PORPHYROSIPHON FUSCUS Gom. apud Frémy Bull. Mus. Hist. Nat. Paris 33: 115 (1927).—On soil wet occasionally by rains. KINGSTON: with *Schizothrix acuminata* on roadside bank near Hope Gardens, *Howe*, Dec. 1906 (FM).

Schizothrix acuminata (Gardn.) Drouet, **comb. nov.** *Microcoleus paludosus* var. *acuminatus* Gardn. Mem. N. Y. Bot. 7: 57, pl. ii, f. 5 (1927). Fila inter alias algas mixta, elongata, laciniata, pseudoramosa, ramis inferne intricatis, superne subparallelis aut in fasciculos repentes tortis; vaginis hyalinis demum pallide roseis vel fusco-roseis, apice hyalinis et acuminatis, firmis, solidis, plus minusve erosis, non aut vix lamellosis, chlorozincico iodurato laete caerules-

centibus; trichomatibus pallide aerugineis, intra vaginas inferne numerosis, superne solitariis vel paucis, parallelis, ad genicula non constrictis, 4–7 μ crassis; articulis diametro trichomatis vulgo longioribus, subquadratis usque ad duplo longioribus, protoplasmate inconspicue granuloso; cellula apicali acutissime conica, haud capitata.—Growing on soil, rocks, and other objects often wet with rainwater, usually in mats with other algae. The species is placed in Gomont's Section *Chromosiphon* near *S. purpurascens*. Its distribution as known to me is as follows. PUERTO RICO: on a wall at Fort San Cristobal, *N. Wille 2013a*, 1915 (TYPE, N). JAMAICA: KINGSTON: on roadside bank near Hope Gardens, *Howe*, Dec. 1906 (FM, N). SONORA: on banks by road to Tastiota southwest of Villa de Seris, *Drouet & Richards 2819a*, Nov. 1939 (FM).

SCHIZOTHRIX MUELLERI Näg. ex Gom. Ann. Sci. Nat. VII Bot. 15: 321 (1892). *Hydrocoleum Hieronymii* Richt. in Hauck & Richt. Phyk. Univ. 543 (1892).—On rocks and soil often wet with fresh water. PORTLAND: Mabess, *Lewis 20*, June 1906 (N).

SCHIZOTHRIX LAMYI Gom. ibid. 15: 323 (1892).—On soil occasionally wet by rains. ST. THOMAS: Arntully, *Orcutt 5722*, 1928 (BM, D, F, N, S, U).

SCHIZOTHRIX CHALYBEA (Kütz.) Gom. ibid. 15: 319 (1892).—On soil and rocks wet with rainwater. See Drouet in Bull. Torr. Club 64: 603 (1937) for notes on distribution. ST. ANDREW: on rocks, Bellevue, *Orcutt 6042, 6334*, 1938 (BM, D, F, N, S, U).

SCHIZOTHRIX VIOLACEA Gardn. Mem. N. Y. Bot. Gard. 7: 52 (1927); Drouet Bull. Torr. Club 64: 603, f. 2, 3 (1937).—On soil and rocks wet with rainwater. ST. THOMAS: Farm Hill Works, *Orcutt 5469*, 1928 (D, N, U); Arntully, *Orcutt 5097, 6807*, 1928 (BM, D, F, N, S, U).

SCHIZOTHRIX LACUSTRIS A. Br. ex Gom. ibid. 15: 301 (1892). *Inactis lacustris* (Gom.) Forti Syll. Myxophyc. 354 (1907).—On rocks almost constantly kept wet in fresh water. ST. ANN: with *Calothrix juliana* on stones in rapid stream, Roaring river, *Humphrey 328* (G, N).

SCHIZOTHRIX TINCTORIA (Ag.) Gom. ex Ann. Sci. Nat. VII Bot. 15: 303 (1892).—In fresh water. Here are placed the specimens recorded in Collins' list as *S. coriacea*. ST. MARY: in turf on sides of lily tank, Botanic Garden, Castleton, *Humphrey 409*, Apr. 1893 (C, F, FM, G, N).

SCHIZOTHRIX MEXICANA Gom. ibid. 15: 304 (1892). *Lyngbyopsis Willei* Gardn. Mem. N. Y. Bot. Gard. 7: 55 (1927).—In fresh water.

For distribution of this species see Drouet in Bull. Torr. Club 65: 286 (1938). The material cited here is that listed by Collins. ST. MARY: on rock in Wag Water river, Castleton, *Humphrey 397*, Apr. 1893 (F, G, N); with *Scytonema stuposum* in reservoir, Botanic Garden, Castleton, *Humphrey*, Apr. 1893 (Phyc. Bor.-amer. 60, T).

SCHIZOTHRIX FRIESII (Ag.) Gom. ibid. 15: 316 (1892). *Symplocastrum Friesii* (Gom.) Kirchn. apud Forti Syll. Myxophyc. 347 (1907). *Schizothrix purcellii* W. R. Tayl. Proc. Acad. Nat. Sci. Phila. 80: 91 (1928). *Symplocastrum Brittonae* Gardn. N. Y. Acad. Sci. Sci. Surv. Porto Rico 8: 287 (1932).—On rocks and soil often wet with fresh water. ST. ANDREW: slopes of Sir John peak, *Harris*, May 1914 (D, N).

HYDROCOLEUM COMOIDES (Harv.) Gom. ibid. 15: 325 (1892).—On rocks between tide marks and in tide pools. The last specimen cited here was reported under this name by W. R. Taylor in Papers Mich. Acad. Sci. 17: 400 (1933). KINGSTON: on rocks, Drunkenmans Cay, *Howe 4707* ,Dec. 1906 (D, N). ST. JAMES: on a littoral reef, Montego Bay, *Howe 4769, 4771*, Jan. 1907 (FM, N); on the seaward shore of the Bogue islands, Montego Bay, *Howe 4821*, Jan. 1907 (N). JAMAICA: Abingdon, *Orcutt 6208b* (T).

HYDROCOLEUM LYNGBYACEUM Kütz. ex Gom. ibid. 15: 337 (1892). *Oscillatoria additica* Gardn.[1] N. Y. Acad. Sci. Sci. Surv. Porto Rico 8: 270 (1932).—On other algae and rocks between tide marks. KINGSTON: on Lithophyllum, Gun Cay, *Howe 4624*, Dec. 1906 (D, N).

HYDROCOLEUM GLUTINOSUM (Ag.) Gom. ibid. 15: 339 (1892).—On rocks between tide marks. KINGSTON: Port Royal, *Orcutt 6731*, Oct. 1928 (T); Drunkenmans Cay, *Howe 4710 4714*, Dec. 1906 (N). ST. JAMES: northern shore of Montego Bay, *Howe 4875*, Jan. 1907 (N).

HYDROCOLEUM FLOCCOSUM (Hauck) Gom. ibid. 15: 341 (1892).—On rocks and other algae in marine waters. HANOVER: on rocks near Sandy bay, *Howe 4975*, Jan. 1907 (D, N).

SIROCOLEUM KURZII (Zell.) Gom. ibid. 15: 349 (1892). *Microcoleus Weeksii* Setch. & Gardn.[2] Univ. Calif. Publ. Bot. 6: 470 (1918).—On larger plants in marine waters. The specimen from

[1] The TYPE of *O. additica* in the New York Botanical Garden (PUERTO RICO: on Amphiroa, Salinas cove near Guanica harbor, *Howe 7209*, June 1915) consists of a mass of *Hydrocoleum lyngbyaceum* in which many of the trichomes have come out of the sheaths.

[2] The TYPE of *M. Weeksii* in the Herbarium of the University of California (CALIFORNIA: on Griffithsia near Pacific Grove, Monterey county, *Mrs. J. M. Weeks*, Feb. 1896) appears to be typical *Sirocoleum Kurzii*.

Jamaica cited here has trichomes smaller than are described for the species. HANOVER: near Sandy bay, *Howe 4977*, Jan. 1907 (N).

SIROCOLEUM GUYANENSE Kütz. ex Gom. ibid. 15: 348 (1892).—In brackish water and on mud between tide marks. JAMAICA: on Bostrychia (N).

MICROCOLEUS CHTHONOPLASTES (Fl. dan.) Thur. ex Gom. ibid. 15: 353 (1892).—On tidal flats and in brackish water. Material recorded in Collins' list as both *M. chthonoplastes* and *M. tenerrimus* is placed here. ST. ANN: in turf of algae, St. Anns Bay, *Humphrey*, Mar. 1893 (G); Runaway bay, *Orcutt 6127*, 1927–28 (T). JAMAICA: *Humphrey 331* (N).

MICROCOLEUS VAGINATUS (Vauch.) Gom. ibid. 15: 355 (1892).—On soil intermittently wet by rains. Here is included the specimen reported under this name by Collins. ST. ANDREW: Cinchona, *Lewis 8*, 1906 (N). ST. CATHERINE: on moist mud, Rio Cobre, Bog Walk, *Humphrey*, Apr. 1893 (G).

MICROCOLEUS ACUTISSIMUS Gardn. Mem. N. Y. Bot. Gard. 7: 55 (1927); Drouet Amer. Journ. Bot. 24: 603, f. 3 (1937). *M. purpurens* Gardn. ibid. 7: 56 (1927).—On soil, rocks, etc. wet intermittently with rain water. ST. ANDREW: on moist rock in gorge of Cane river near Kingston, *Howe*, Dec. 1906 (FM, N).

PLECTONEMA WOLLEI Farl. ex Gom. Ann. Sci. Nat. VII Bot. 16: 98 (1892).—In fresh water. See Drouet in Field Mus. Bot. Ser. 20: 45 (1939). Specimens reported in the Collins list are included here. ST. THOMAS: in fresh water, Morant Bay, *Pease & Butler*, July 1894 (N). ST. ANN: in rapid current of Roaring river, *Humphrey*, Mar. 1893 (Phyc. Bor.-amer. 55c, FM, N, T).

PLECTONEMA TOMASINIANUM (Kütz.) Born. ex Gom. ibid. 99 (1892). *Lyngbya subconfervoides* Borge, Ark. f. Bot. 15 (13): 91 (1919).—In fresh water. PORTLAND: on stones in running water in gully, Stone Valley river, *Orcutt 5881, 5883*, 1928 (BM, D, F, N, S, U).

PLECTONEMA NOSTOCORUM Born. ex Gom. ibid. 16: 102 (1892).—Common in matrices and sheaths of most gelatinous algae. Among others may be cited one specimen, ST. THOMAS: with *Nostoc commune*, Moy Hall, *Orcutt 6828*, Nov. 1928 (D, F, N, U).

SYMPLOCA HYDNOIDES Kütz. ex Gom. ibid. 16: 106 (1892). *Phormidium pulvinatum* Coll. in Britt. & Millsp. Bahaman Fl. 621 (1920). *Symploca Howei* Gardn.[1] N.Y. Acad. Sci. Sci. Surv. Porto

[1] The TYPE of *S. Howei* in the New York Botanical Garden (PUERTO RICO: in shallow warm water, Cayo Don Luis near Pt. Montalva, *Howe 7186*, June 1915) is typical *S. hydnoides*.

Rico 8: 283 (1932).—On other algae, rocks, etc. between tide marks. The one Jamaican specimen was recorded by Collins. JAMAICA: *Pease & Butler*, 1900 (N).

SYMPLOCA ATLANTICA Gom. ibid. 16: 109 (1892).—On rocks and other objects between and just above tide marks. HANOVER: near Sandy bay, *Howe 4933*, Jan. 1907 (D, N).

SYMPLOCA LAETE-VIRIDIS Gom. ibid. 16: 109 (1892). *Phormidium tenue* var. *marinum* Gardn.[1] N.Y. Acad. Sci. Sci. Surv. Porto Rico 8: 282 (1932).—On calcareous algae and on rocks between tide marks and just below. KINGSTON: in 3 dm. of water, in the harbor, *Howe 4472*, Dec. 1906 (D).

SYMPLOCA MUSCORUM (Ag.) Gom. ibid. 16: 110 (1892). *Phormidium Corium* var. *capitatum* Gardn. Univ. Calif. Publ. Bot. 14: 4 (1927). *P. interruptum* var. *capitatum* Gardn. Mem. N. Y. Bot. 7: 44 (1927).—Subaerial on soil, rocks, and mosses in fresh water. PORTLAND: trail from Morces Gap to Vinegar Hill, *Maxon & Killip 1317*, Mar. 1920 (F, FM, N). JAMAICA: on mosses, *Lewis*, July 1906 (N); G. river, *Lewis 21a*, July 1906 (N).

LYNGBYA SORDIDA (Zanard.) Gom. ibid. 16: 126 (1892). *L. rosea* W. R. Tayl. Carn. Inst. Wash. Papers Tortugas Lab. 25: 45 (1928). *L. sordida* f. *rosea* (W. R. Tayl.) Drouet in J. DeToni Diagn. Alg. Nov. 1 (Myxophyc. iii): 236 (1938).—Chiefly epiphytic on larger plants in marine waters. KINGSTON: Gun Cay near the harbor, *Howe 4610*, Dec. 1906 (D, N). ST. JAMES: on rocks, north shore of Montego Bay, *Howe 4854*, Jan. 1907 (D, N).

LYNGBYA AESTUARII (Mert.) Liebm. ex Gom. ibid. 16: 127 (1892). *L. ocreata* Gardn.[2] Mem. N. Y. Bot. Gard. 7: 39 (1927). *L. scytonematoides* Gardn. loc. cit. (1927.—On tidal flats and in brackish and fresh water. ST. CATHERINE: Fort Augusta, Kingston harbor, *Orcutt 6514*, Oct. 1928 (BM, D, F, S, U); Port Henderson, *Orcutt 6028*, 1928 (D, U).

LYNGBYA MAJUSCULA (Dillw.) Harv. ex Gom. ibid. 16: 131 (1892). —On rocks and other algae between tide marks. Included here are the specimens recorded in the Collins list. PORTLAND: Navy island, Port Antonio, *Humphrey 190*, Mar. 1893 (C, F, G, N); Port Antonio,

[1] The TYPE of *P. tenue* var. *marinum* in the New York Botanical Garden (PUERTO RICO: on sand rock, San Juan, *Howe 2112*, May 1903) is similar to the original collections of *Symploca laete-viridis* described by Gomont from Key West.

[2] The filaments referred to as *L. ocreata* and *L. scytonematoides* in the TYPE specimens in the New York Botanical Garden (PUERTO RICO: on damp earth by Playa, Fajardo, *N. Wille 710b and c*, Jan. 1915) appear to me to be peculiar growth-forms of *L. aestuarii*.

Wight, 1905–06 (S, T), *Pease & Butler*, July 1894 (F, N), July 1891 (N). KINGSTON: Gun Cay near the harbor, *Howe 4619*, Dec. 1906 (D, N); Drunkenmans Cay, *Howe 4708* (D, N), *4729* (N), Dec. 1906. ST. JAMES: Montego Bay, *Davis*, 1926 (FM, T); in a Rhizophora association, Bogue islands, Montego Bay, *Howe 4745*, Jan. 1907 (C, D, F, N); seaward shore of Bogue islands, *Howe 4821*, Jan. 1907 (D). JAMAICA: *Pease*, 1892 (FM, N); floating in shallow water, *Pease & Butler*, July 1900 (Coll. N. Amer. Alg. 11, D, N).

LYNGBYA CONFERVOIDES Ag. ex Gom. ibid. 16: 136 (1892). *L. confervoides* f. *violacea* Coll. Proc. Amer. Acad. 37: 240 (1901).—On rocks and wood between tide marks. Collins' type of the f. *violacea* and specimens reported as *L. aestuarii* belong here. PORTLAND: Manchioneal bay, *Pease & Butler*, July 1900 (TYPE of *L. confervoides* f. *violacea*, F), ST. ANDREW: north shore of Kingston harbor, *Howe 4683*, Dec. 1906 (F, N), *4681* (D, N). KINGSTON: on stones in harbor, *Humphrey 384*, Apr. 1893 (C, F, G, N); on Thalassia, Drunkenmans Cay, *Howe 4725*, Dec. 1906 (D, N); in the harbor, *J. E. Duerden*, May 1901 (N). ST. JAMES: northern shore of Montego Bay, *Howe 4855*, Jan. 1907 (D, N).

LYNGBYA PUTEALIS Mont. ex Gom. ibid. 16: 143 (1892).—In fresh water. The one specimen, recorded in the Collins list, [ST. THOMAS: Morant Bay,] *Pease & Butler* (N).

LYNGBYA VERSICOLOR (Wartm.) Gom. ibid. 16: 147 (1892). *Leptothrix tenax* Wolle Fresh Water Alg. U. S. 319 (1887). *Hypheothrix tenax* Wolle ex Forti Syll. Myxophyc. 329 (1907).—In fresh water. The one collection is that reported in the Collins list. KINGSTON: on sides of basin of a fountain, Marine Garden, *Humphrey*, Apr. 1893 (Phyc. Bor.-amer. 54b, FM, G, N).

PHORMIDIUM CROSBYANUM Tild. Amer. Alg. 7: 645 (1909). *P. Hendersonii* Howe Smiths. Misc. Coll. 68: 2 (1918). *P. angustissimum* var. *saxicola* Gardn. N. Y. Acad. Sci. Sci. Surv. Porto Rico 8: 279 (1932). Stratum viride, luteum, fuscum, aerugineum, griseum, vel roseolum, pulvinatum vel depresso-hemisphaericum, cartilagineum, plus minusve calcareum, filis minutis, ad basalem partem plantae intricatis, superne parallelis, flexilibus; vaginis arctis saepe diffluentibus, hyalinis, chlorozincico iodurato caerulescentibus; trichomatibus pallide aerugineis, 1–2 μ crassis, ad genicula non constrictis, ad apices non attenuatis; articulis diametro trichomatis usque ad duplo longioribus, protoplasmate haud granuloso; cellula apicali superne rotundata, non capitata.—In shallow tropical marine waters, forming cushions of leathery texture. As do those of *Lyngbya*

sordida, Phormidium tinctorium, and certain other species of myxophyceae, the trichomes shrivel in specimens which dry slowly; preserved material always gives the impression at first of being hopeless for critical observation. Howe's observation that the sheath-material in the TYPE of *P. Hendersonii* does not become blue when treated with chlor-zinc-iodine is an error. Among many specimens of *P. Crosbyanum* at hand the following have been selected to illustrate the species and its distribution. BAHAMA ISLANDS: in a tidal pond, West Caicos, *Howe 5701,* Dec. 1907 (FM, N). PUERTO RICO: on rocks, littoral, Santurce, *Howe 1929,* May 1903 (TYPE of *P. angustissimum* var. *saxicola* Gardn., N; isotype, D). GUADELOUPE: sur le sable, Pointe de Châteaux, *J. Feldmann 3760,* avril 1936 (T). TOBAGO: on Buccoo reef, *W. R. Taylor 517, 547,* Apr. 1939 (FM). HAITI: reef of coral, island off Anse à Margot (Bayeux) between Cap Haitien and Le Borgne, *H. H. Bartlett 17996,* June 1941 (FM). CUBA: on reef, Cayo Jutias, Pinar del Rio, *Henderson & Bartsch 103,* May 1914 (TYPE of *P. Hendersonii* Howe, U; isotypes, D, N). JAMAICA: Kingston: in 3 dm. of water in the harbor, *Howe 4472,* Dec. 1906 (Mo, N). St. James: near Montego Bay, *Howe 5021,* Jan. 1907 (N). PANAMA: on corals in high tide pools, southeast end of Caledonia harbor, Panama province, *W. R. Taylor 241,* Apr. 1939 (FM). HAWAIIAN ISLANDS: on rock shelf between tides, Wainae, Oahu, *J. E. Tilden* (N; isotype of *P. Crosbyanum* Tild. in Amer. Alg. 645, FM). PHILIPPINES: Lubang, Mindoro province, *H. S. Villaflores 13,* Sept. 1935 (FM); Boquete, vicinity of Puerto Galera, Mindoro, *H. H. Bartlett 14034* (FM).

PHORMIDIUM VALDERIANUM Gom. ibid. 16: 167 (1892).—In fresh water. JAMAICA: 'Jamaica, *Huss*' (F).

PHORMIDIUM PAPYRACEUM (Ag.) Gom. ibid. 16: 173 (1892). *P. autumnale* var. *minus* Gardn. Mem. N. Y. Bot. Gard. 7: 45 (1927). —In fresh water. The one specimen is that reported by Hansgirg in Wittrock & Nordstedt, *Algae exsiccatae* 16: 776b (1886), as *Lyngbya* (*Phormidium*) *inundata.* ST. ANDREW: ad Gordon Town, *W. Joshua,* Oct. 1884 (Wittr. & Nordst. Alg. exs. 776b, FM).

PHORMIDIUM INUNDATUM Kütz. ex Gom. ibid. 16: 172 (1892). *P. purpurascens* var. *elegans* Drouet Bot. Gaz. 95: 696 (1934).— In fresh water. JAMAICA: with *P. uncinatum, Humphrey 426* (N).

PHORMIDIUM RETZII (Ag.) Gom. ibid. 16: 175 (1892). *P. leptodermum* var. *capitatum* Gardn. Mem. N. Y. Bot. Gard. 7: 43 (1927). —In fresh water. The one collection is the basis of the record in

Collins' list. ST. CATHERINE: in tufts on plants, Rio Cobre, Bog Walk, *Humphrey*, Apr. 1893 (F, G, N).

PHORMIDIUM UNCINATUM (Ag.) Gom. ibid. 16: 184 (1892).—In fresh water. PORTLAND: Stone Valley river, *Orcutt 5851, 5863* (D, N, U). JAMAICA: *Humphrey 426* (N).

PHORMIDIUM PENICILLATUM Gom. in Jadin Bull. Soc. Bot. France 40: clix (1893). *Symploca profunda* W. R. Tayl. Carn. Inst. Wash. Papers Tortugas Lab. 25: 47 (1928). *Oscillatoria maricola* Gardn. N. Y. Acad. Sci. Sci. Surv. Porto Rico 8: 270 (1932).—In quiet marine waters. See Drouet in Bull. Torr. Club 65: 286 (1938). PORTLAND: shaded shallow water, Blue Hole, *Wright*, May 1906 (D, F, N, S). Also to be referred here is the specimen from KINGSTON: on stones, Drunkenmans Cay, *Howe 4701*, Dec. 1906 (N).

OSCILLATORIA PRINCEPS Vauch. ex Gom. Ann. Sci. Nat. VII Bot. 16: 206 (1892). *O. princeps* f. *purpurea* Coll. in Coll. Hold. & Setch. Phyc. Bor.-amer. 16: 753 (1900). *O. obtusa* Gardn. Mem. N. Y. Bot. Gard. 7: 38 (1927). *Lyngbya gigantea* Lew. Zirk. & Patr. Journ. Mitch. Sci. Soc. 1933: 221 (1933).—In quiet fresh water. Specimens recorded in Collins' list as both *Oscillatoria princeps* and f. *purpurea* are included here. ST. THOMAS: Bath, *Pease & Butler*, July 1900 (TYPE of *O. princeps* f. *purpurea*, N; isotypes in Phyc. Bor.-amer. 753, D, FM, N, T, U). ST. ANN: in stream, St. Anns Bay, *Humphrey 315, 315a*, Mar. 1893 (F, G, N).

OSCILLATORIA PROBOSCIDEA Gom. ibid. 16: 209 (1892). *O. refringens* Gardn. Mem. N. Y. Bot. Gard. 7: 38 (1927).—In quiet fresh water. The specimens cited here are those of Collins' list. ST. MARY: in pool by Wag Water river, Castleton, *Humphrey 401*, Apr. 1893 (C, G, N); in stream from reservoir, Castleton, *Humphrey 408*, Apr. 1893 (C, FM, G, N).

OSCILLATORIA BONNEMAISONII Crouan ex Gom. ibid. 16: 215 (1892).—In brackish and almost marine water. KINGSTON: Drunkenmans Cay, *Howe 4712*, Dec. 1906 (D, N).

OSCILLATORIA TENUIS Ag. ex Gom. ibid. 16: 220 (1892).—In fresh water. The one specimen is that listed by Collins. ST. THOMAS: Bath, *Pease & Butler*, 1900 (N).

OSCILLATORIA FORMOSA Bory ex Gom. ibid. 16: 230 (1892).—In fresh water. The specimens reported as *O. formosa* and *O. anguina* in Collins' list are treated here. ST. MARY: in spring pool, Castleton, *Humphrey*, Apr. 1893 (G). ST. ANN: in still pool below fall, Roaring river, *Humphrey 326, 326a*, Mar. 1893 (C, F, G, N). JAMAICA: *Humphrey* (D), *412* (N).

SPIRULINA TENERRIMA Kütz. ex Gom. ibid. 16: 252 (1892). *S. socialis* Gardn.[1] N. Y. Acad. Sci. Sci. Surv. Porto Rico 8: 272 (1932).—In brackish and marine waters. ST. ANN: with *Microcoleus chthonoplastes*, Runaway bay, *Orcutt 6127*, 1927–28 (T). HANOVER: with *Hydrocoleum floccosum* on rocks near Sandy bay, *Howe 4975*, Jan. 1907 (D).

[1] The TYPE of *S. socialis* in the New York Botanical Garden (PUERTO RICO: Santurce, *Howe 2162a*, May 1903) appears to contain only typical *S. tenerrima*.

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